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Literacy Program-Demonstration Approach under Scaling up Early Reading Intervention (SERI) funded by USAID

2018 Evaluation Report for Chhattisgarh and Uttarakhand

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ABSTRACT

In September 2015, Room to Read entered into an agreement with the United States Agency for International Development for implementing a large-scale, innovative, early-grade reading program – Scaling up Early Reading Intervention (SERI) – aimed at benefiting children in the government primary schools in the states of Chhattisgarh and Uttarakhand. The SERI project includes a phase in which Room to Read demonstrates an effective model towards improving reading outcomes among primary grade children through direct implementation of its Literacy Program (defined as demonstration approach). In 2015, Room to Read also began a two-year (2015-17) impact evaluation study of the Program under demonstration approach in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) to (i) estimate the extent of impact of the Program after two years of intervention on the reading skills of children enrolled in the project schools in 2015-16 school year; and (ii) establish a direct causal relationship between the estimated impact on children’s reading skills and the Program. Results of this two-year impact evaluation conclusively established that children from project schools under demonstration approach performed better and experienced significantly greater gains in reading skills than children from comparison schools. In 2018 Room to Read conducted two fresh evaluations to assess (i) whether the positive impact on children’s reading skills revealed by the 2015-17 impact evaluation study in Literacy Program schools under demonstration approach in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) was sustained with the new batch of children enrolled in 2016-17 academic year; and (ii) how well children were performing in Program schools under demonstration approach established in new areas in 2016-17 academic year in Raipur (Chhattisgarh) and Udham Singh Nagar (Uttarakhand). Results of both of these 2018 evaluations are encouraging. Average reading scores of Grade 2 children who got enrolled in the sample of existing Program schools in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) in 2016-17 were higher than the average scores of Grade 2 children who were enrolled in the same schools in 2015-16. On the other hand, in the new Program geographies, Grade 2 children who begun schooling in 2016-17 academic year performed significantly better than their counterparts in comparison schools after two years of intervention. These results imply that with expansion to new geographies, Room to Read’s Literacy Program in India under USAID/SERI demonstration approach remains effective, moreover, the effectiveness improves as the Program gets mature in existing geographies.

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1 Introduction

1.1 Literacy Program under Demonstration Approach

In September 2015, Room to Read entered into an agreement with the United States Agency for International Development (USAID) for implementing a large-scale, innovative, early grade reading program aimed at benefiting children in government primary schools in India. Known as the Scaling up Early Reading Intervention (SERI), the project aims to demonstrate an effective model towards improving reading outcomes among primary grade children and an innovative approach for scaling NGO-led interventions through the government system. The scale up is based on a scaffold approach which includes:

- (i) *Demonstration*: Demonstration of the model through direct implementation by Room to Read in select government primary schools in some districts;
- (ii) *Partnership*: Collaborate closely to assist the state government in expansion of the model across entire district; and
- (iii) *Scale-up*: Handing over the model to the government for replication in other districts.

The foundation for SERI is Room to Read's Literacy Program¹, a school-based intervention that seeks to develop children's reading skills and reading habits in the early primary grades. The program includes two main components: (1) *Instruction*: reading and writing instruction for children in Grades 1 and 2; and (ii) *Library and Quality Reading Materials (QRM)*: access to quality reading materials through the establishment of school libraries. For the instruction component, the Literacy Program team in India worked with the Department of Education to design a supplementary program that provides a strong foundation in reading and writing skills for all early primary grade children in the Room to Read schools, with the goal that children will become fluent readers by the end of Grade 2. The program includes detailed lesson plans, classroom materials, and comprehensive teacher professional development including continuous monitoring and support from Room to Read appointed Literacy Coaches/ Facilitators.

(See *Appendix A* for a more detailed description of the instruction component of the Literacy Program).

As part of the demonstration approach of SERI, Room to Read launched the Literacy Program at 80 schools in Raipur district in Chhattisgarh and 100 schools in Dehradun district in Uttarakhand at the beginning of the 2015-16 academic year. At the beginning of the next schools year 2016-17, the Program under demonstration approach was further expanded to 100 new schools in Raipur district in Chhattisgarh and 100 new schools in Udham Singh Nagar in Uttarakhand respectively.

1.2 Evaluation of the Program

In 2015, Room to Read also began a two-year (2015-17) impact evaluation study of the Program under demonstration approach in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) to (i) estimate the extent of impact (i.e. effect size) of the Program on reading skills of children in project schools, and (ii) establish a direct causal relationship between the estimated impact on reading skills and the Program. Following a quasi-experimental impact evaluation design, under this two-year study Room to Read collected data on reading skills from 50 schools

¹ Alternatively referred as "Program" in this documents.

benefiting from the program (defined as project group) and 50 schools not benefiting from the program but having characteristics similar to the project schools (defined as comparison group) in the two districts at three different points of time, such as, (i) baseline with start-of-Grade 1 children at the beginning of the program in August 2015; (ii) midline with end-of-Grade 1 children after one year of intervention in Feb-March 2016; and (iii) endline with end-of-Grade 2 children after two years of intervention in Feb-March 2017. Using the data from these three points of time, we compared the gains in reading skills of children from baseline to midline/ endline in project schools with the gains in reading skills of children from baseline to midline/ endline in comparison schools. **Results of this two-year impact evaluation conclusively established that children from project schools under demonstration approach performed better and experienced significantly greater gains in reading skills than children from comparison schools.**

With this background, Room to Read conducted two fresh evaluations for the Program under demonstration approach in the two states in 2018, such as,

- **2018 Program-only Assessment (POA):** Assessment of reading skills of the end-of-Grade 2 children who begun schooling in academic year 2016-17 in the same schools in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) where the Program was launched at the beginning of the academic year 2015-16 and were part of the two-year impact evaluation (2015-17) study. The purpose of this assessment was to assess whether the positive results as revealed by the two-year impact evaluation was sustained for the fresh set of children who entered Grade 1 in the same schools after one year of the beginning of the Program. As this 2018 evaluation included children from those 50 *program* schools (25 from each state) that that were part of the project group sample for the two year impact evaluation study, it is defined as the *Program-only Assessment*.
- **2018 Snapshot Evaluation:** Assessment of reading skills of the end-of-Grade 2 children after two years of intervention in schools where the Program under demonstration approach was launched for the first time in 2016-17 school year in Raipur (Chhattisgarh) and Udham Singh Nagar (Uttarakhand) respectively. Under this evaluation we assessed children from 40 randomly selected project schools (20 from each state) and compared the results with the reading of skills of end-of-Grade 2 children from 40 randomly selected non-project schools (20 from each state) that were similar in nature to the project schools. The purpose of this evaluation was to assess effectiveness of the Program under demonstration approach in new geographies by contrasting the reading skills of children from two groups at *one point of time*. Consequently it is defined as *Snapshot Evaluation*.

Room to Read with support from independent data collectors conducted this two evaluations and the results of these evaluations are presented in *Sections 3: Results of the 2018 Program-only Assessment* and *Section 4: Results of the 2018 Snapshot Evaluation* respectively

(Location-wise results from these two evaluation are presented in *Appendix B* and *Appendix C* respectively)

1.3 Sampling of Children for Evaluation

Under each evaluation, we tried to randomly select and assess 10 children from each school. In cases where the number of children present on the day of assessment was less than 10, we tested all children present in the class.

Children with any visibly noticeable physical, sensory and significant cognitive disabilities were excluded from the assessment.² Final sample size that were achieved during the evaluations were as follows.

- **2018 Program-only Assessment (POA):** A total of 481 children were assessed from 50 project schools; 238 from Raipur (Chhattisgarh) and 243 from Dehradun (Uttarakhand).
- **2018 Snapshot Evaluation:** A total of 385 children for project schools were assessed from 40 project schools; 193 from Raipur (Chhattisgarh) and 192 Udham Singh Nagar (Uttarakhand). From the 40 comparison schools; 319 children were assessed; 178 from Raipur (Chhattisgarh) and 141 Udham Singh Nagar (Uttarakhand).

1.4 Tool used for Reading Skills Assessment

In these evaluations, Room to Read assessed children's reading skills using a version of the Early Grade Reading Assessment (EGRA)³ that was adapted from English to Hindi by local experts. Room to Read used a version of the EGRA that was designed according to the expected reading levels of Grade 2. The EGRA was comprised of five common tasks:

- *Letter sounding fluency:* Ability to read letters of the alphabet without hesitation and naturally. This is a timed test that assesses automaticity and fluency of letter recognition. Children were given one minute to read 100 letters.
- *Non-word reading fluency:* Ability to read words that do not exist, but whose letter combinations follow the rules of the language. This task assesses the child's ability to "decode" words fluently as distinct from their ability to recognize words they have seen before. Children were given one minute to read 50 non-words.
- *Oral reading fluency:* Ability to read a 60-word passage that tells a story. Children were given up to three minutes to read the passage. The evaluation used four different versions of Hindi reading passages in the actual tests, which were randomly used across children.
- *Reading comprehension:* Ability to answer five comprehension questions based on the passage.

Assessments were administered individually with children by an external data collection agency that was recruited and trained by Room to Read. Room to Read hired Sigma Research and Consulting Private Limited, an India-based survey firm, to manage the data collection.⁴

² Data collectors were not able to identify or exclude children with learning and/or reading disabilities as such disabilities are difficult to detect in early grades.

³ The EGRA was developed by RTI International in 2006. For more information, please see: <https://shared.rti.org/content/early-grade-reading-assessment-egra-toolkit-second-edition>.

⁴ Room to Read hired and trained the external assessors to collect EGRA data from children using Computer Aided Personal Interview (CAPI) method through tablet with the help Tangerine software. Data collection in Chhattisgarh and Uttarakhand was conducted during February 2018.

2 Results of the 2018 Program-only Assessment

2.1 Average Reading Assessment Scores

As shown in Table 2.1 below, Grade 2 children who begun schooling in 2016-17 in the sample of existing Literacy Program schools in the two states under demonstration approach could correctly read an average of 37 words per minute and correctly answer more than two reading comprehension question (out of five) after two years intervention. Children from schools in Raipur (Chhattisgarh) performed significantly better than the children from schools in Dehradun (Uttarakhand) on letter sounding fluency ($p < 0.001$), non-word reading fluency ($p < 0.001$) and oral reading fluency ($p < 0.01$) respectively.⁵ Older children performed better on letter sounding fluency ($p < 0.01$) and oral reading fluency ($p < 0.05$) respectively. Girls scored significantly higher than boys on oral reading fluency ($p < 0.01$) and children who gets support in study at home score significantly higher than the others on letter sounding fluency ($p < 0.01$).

TABLE 2.1: Reading Assessment Results for Grade 2 Children in the Existing Program Schools

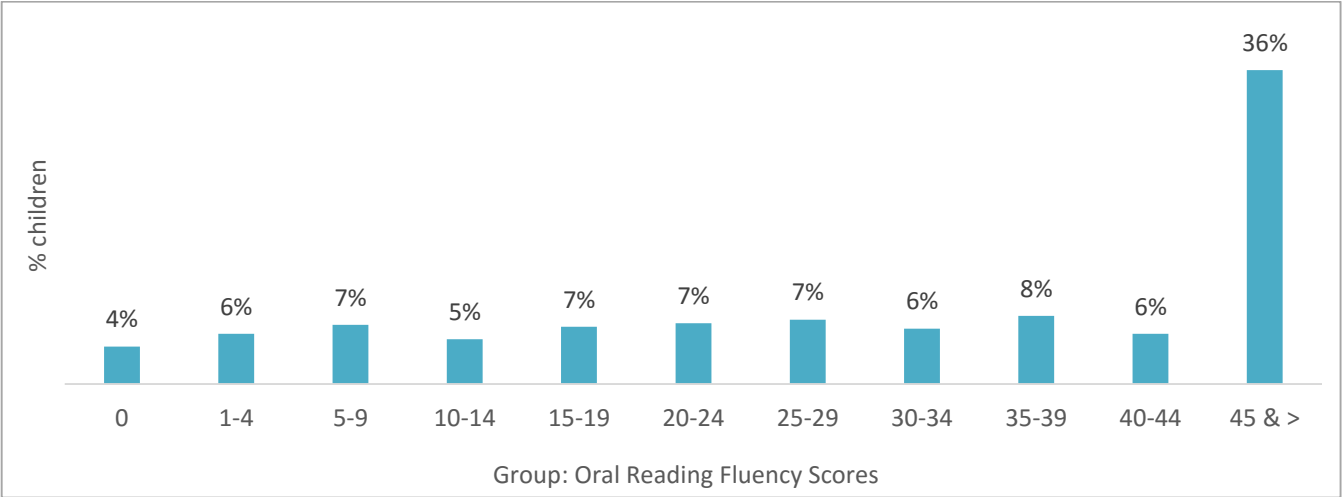
Assessment Task	n	Mean	Std. Deviation
Letter sounding fluency (letters per minute)	481	53.3	21.7
Non-word reading (non-words per minute)	481	16.9	10.6
Oral reading fluency (correct words per minute)	481	37.2	26.1
Reading comprehension (number of questions answered correctly)	481	2.5	1.5

2.2 Oral Reading Fluency and Comprehension Benchmark

As shown in Figure 2.1 below 36 percent of the Grade 2 children who begun schooling in 2016-17 academic year in the sample of existing Program schools included in this evaluation reached our fluent reader benchmark of correctly reading 45 or more words per minute. However, it can be also seen from Figure 2.1 that 18 percent of the children in the project schools could be characterized as weak reader who could correctly read only 1-14 words per minute.

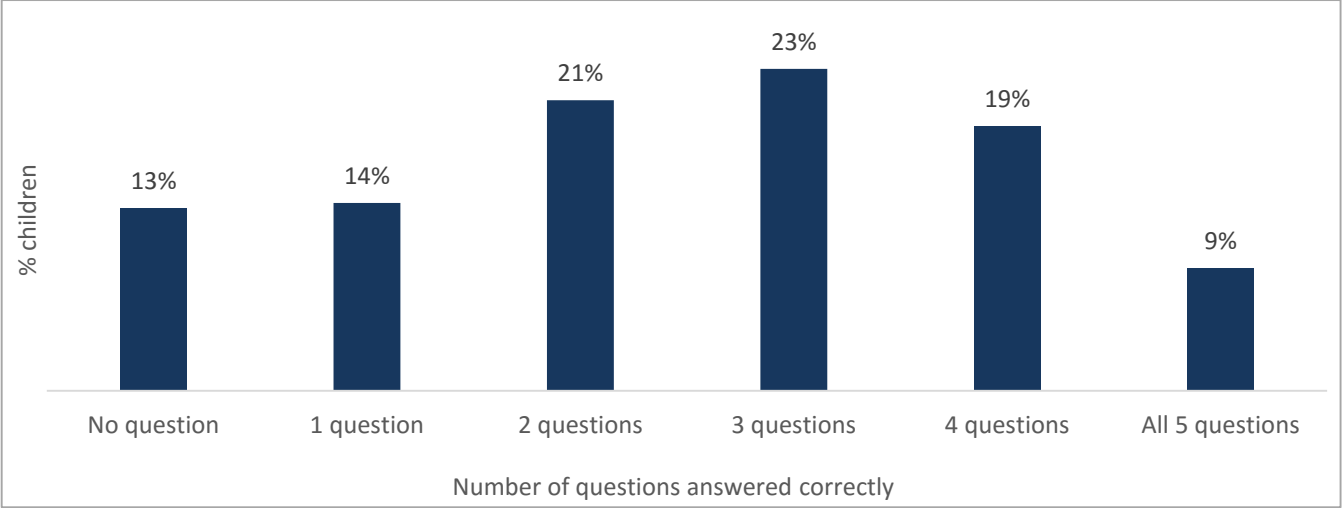
⁵To determine the possible predictors of reading skills, we conducted separate linear regressions analysis with random effect at school level for each assessment task with score as the dependent variable. Each regression analysis included several possible child-level predictors (e.g. age, gender, and whether child speaks Hindi at home, attended pre-school, gets support in study at home, has collection of books at home for his/ her reading, takes newspaper at home, and has television at home), school-level predictors (e.g. enrolment in Grade 2, attendance rate on the day of assessment, number of teachers, pupil teacher ratio, mono- or multi-grade classroom, and instruction time for language class) and dummy variable for location (Raipur/ Dehradun). Additionally, version of Hindi reading passage used during test were included as covariate in the regression analyses for oral reading fluency and reading comprehension, respectively. Predictors that were found to be statistically significant from the regression analysis of each reading assessment task are described in this section.

FIGURE 2.1: Distribution of Oral Reading Fluency Scores of Grade 2 Children in the Existing Program Schools



As shown in Figure 2.2, 52 percent of the children in the sample existing Program schools could correctly answer at least three out of five reading comprehension questions (i.e. reached 60% level of comprehension) and 28 percent could correctly answer four out of five reading comprehension questions (i.e. reached 80% level of comprehension) by the end of Grade 2.

FIGURE 2.2: Distribution of Reading Comprehension of Grade 2 Children in the Existing Program Schools



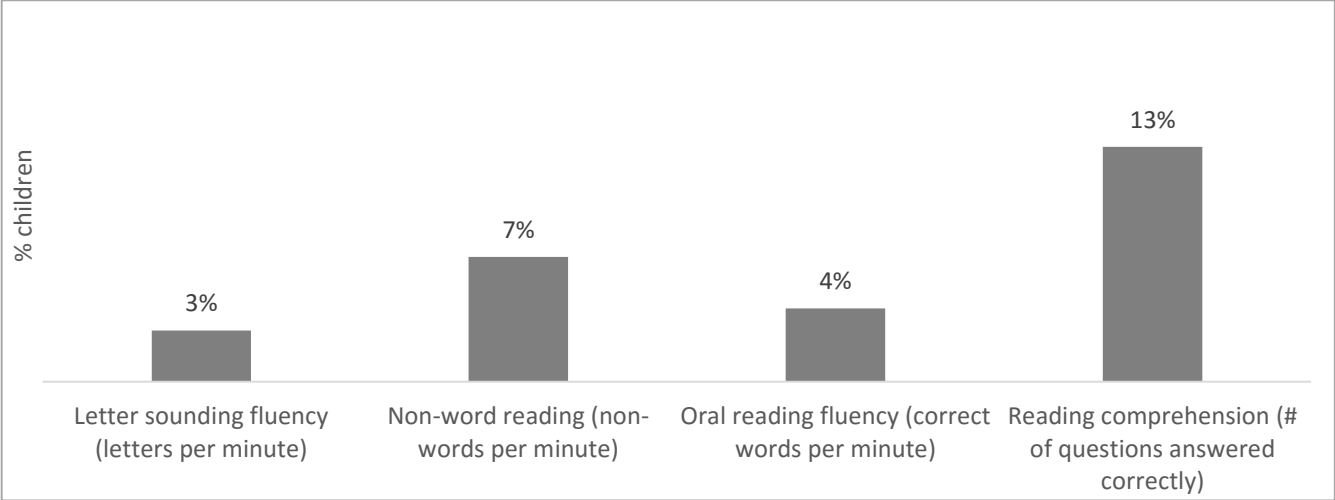
2.3 Prevalence of Zero Scores

Analysis of zero scores provides another view of how children performed, with a focus on children with the lowest achievement. In an EGRA, zero scores include those instances in which a child does not provide correct responses to any of the items in a particular assessment task, as well as those instances when a child does not answer or respond correctly to any of the first pre-decided number of items for a particular assessment task (also known as a discontinued task)⁶. Zero scores on tasks show the subset of children who can be characterized as nonreaders.

⁶ For example, on letter sounding fluency test, if a child could not give correct answer on any of the first 10 letters, the test was discontinued and the child was given 0 score on the test. Similarly, on non-word reading test, the threshold for discontinuity was set at first 5 non-words. For oral reading fluency test, we have used four different version of Hindi passages, each having 60 words, with similar level of difficulty in

As shown in Figure 2.3, prevalence of zero scores for Grade 2 children in the sample of existing Program schools was lowest on letter sounding fluency (three percent) followed by oral reading fluency (four percent) and non-word reading fluency (seven percent) tests respectively. Highest prevalence of zero scores was found in case of reading comprehension tests 13 percent).

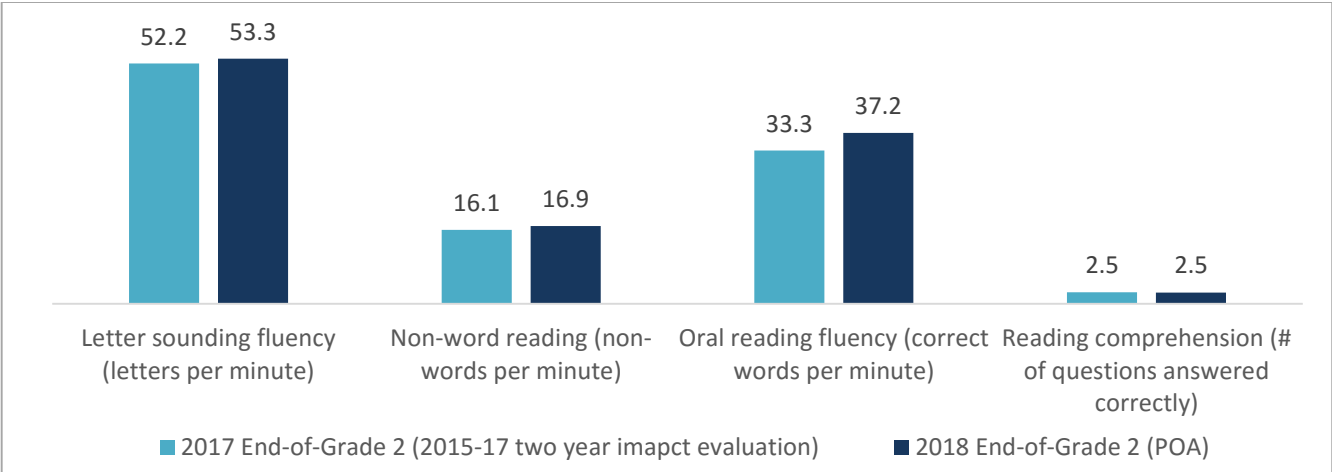
FIGURE 2.3: Prevalence of Zero Scores for Grade 2 Children across Reading Assessments Tasks in the Existing Program Schools



2.4 Trend Analysis

Overall, 2018 Grade 2 assessment results were better than the results from the 2017 Grade 2 evaluation results from the same set of Program schools (see Figure 2.4). Results of oral reading fluency tests were particularly promising; children who were completing Grade 2 in 2017-18 could correctly read, on average, 4 more words than the children who completed Grade 2 in 2016-17. Results also show that 2018 Grade 2 oral reading fluency scores in both states were higher than the 2017 scores; however, the difference in the scores between years was higher in Chhattisgarh than Uttarakhand.

FIGURE 2.4: Comparison of Grade 2 Assessment Results from 2017 and 2018 in the Existing Program Schools



reading. The threshold for discontinuation for each these passages was slightly different from each other, ranging between first 7 to 11 words across passages.

3 Results of the 2018 Snapshot Evaluation

3.1 Average Reading Assessment Scores

As shown in Table 3.1 below, children who begun schooling in 2016-17 in the Literacy Program schools under demonstration approach in new geographies in Raipur (Chhattisgarh) and Udham Singh Nagar (Uttarakhand) performed significantly better than their counterparts in comparison schools after two years of intervention. By end of Grade 2 children in the sample project schools could read an average of 26 words correctly per minute as compared to just 10 words read correctly per minute by children in comparison schools; the difference in the scores between groups was statistically significant ($p < 0.001$). Also, the project school children could, on average, correctly answer two reading comprehension questions whereas comparison group children could answer just one question correctly; the difference in the scores between groups was statistically significant ($p < 0.01$). We have examined the reading assessment scores separately for girls and boys and the results show that both girls and boys in project schools performed significantly better than boys and girls in comparison groups across all tasks respectively. Analysis of data separately for each location reveals that children in project schools in Raipur (Chhattisgarh) scored significantly higher than their counterparts in the comparison schools across all tasks. However, in Udham Singh Nagar (Uttarakhand), children scored significantly higher in case of letter sounding fluency only ($p < 0.05$) only; on rest of the tests differences between project and comparison school children in this district was not statistically significant.

TABLE 4.1: Reading Assessment Results for Grade 2 Children in the New Geographies

Assessment Task	Group	n	Mean	Std. Deviation	Adjusted difference between Groups [†]
Letter sounding fluency (letters per minute)	Project	385	45.0	26.6	+16.9***
	Comparison	319	24.0	23.9	
Non-word reading (non-words per minute)	Project	385	11.3	11.1	+3.7**
	Comparison	319	6.3	7.2	
Oral reading fluency (correct words per minute)	Project	385	25.7	27.8	+13.2***
	Comparison	319	9.5	13.0	
Reading comprehension (# of questions answered correctly)	Project	385	1.7	1.6	+0.6**
	Comparison	319	0.9	1.4	

Legend of statistical significance of difference between groups: * $p < .05$ ** $p < .01$ *** $p < .001$

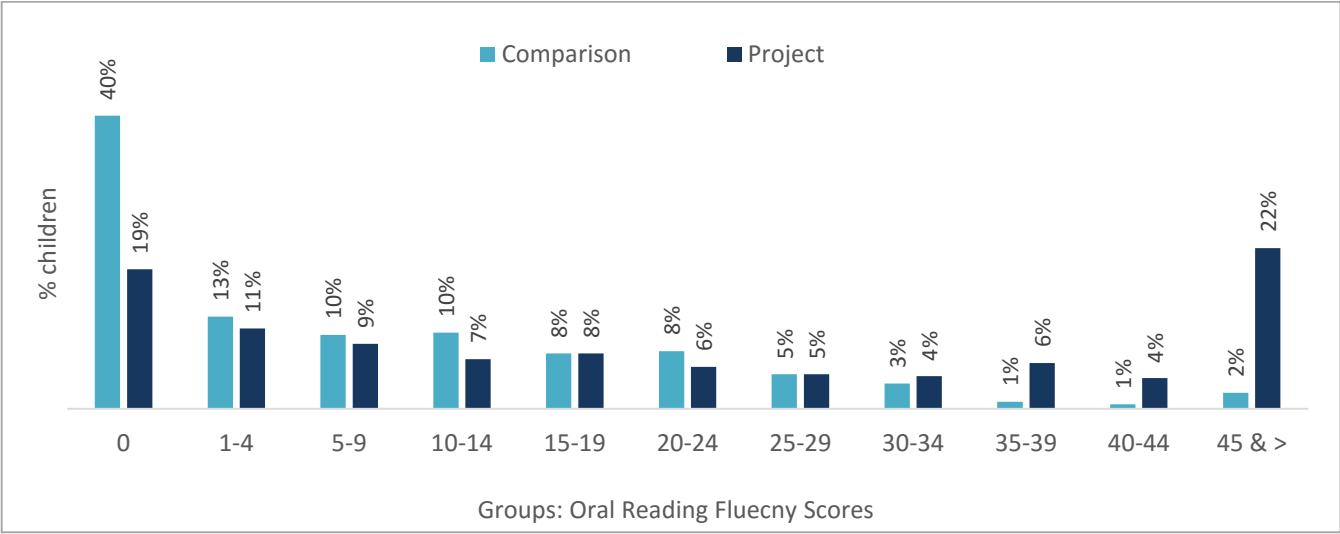
[†]Adjusted difference between the reading assessment scores of children from project and comparison schools. This reports the coefficient of the independent dummy variable on group type (project/ comparison) from the regression analysis conducted with random effects at the school level and age, gender, enrollment in Grade 2, and number of teachers in primary grade as covariates. Regression analysis was conducted for each of the assessment task with score as the dependent variable. Additionally, version of oral reading passage used during test were included in the regression analysis for reporting results for oral reading fluency and reading comprehension, respectively. The set of covariates included in each regression analysis was determined by examining the statistical significance of the difference between project and comparison groups on (i) school-level characteristics through t-tests (for continuous variables) and chi-square tests (for categorical variables); and (ii) child-level characteristics through separate regression analyses with random effect at school level, each characteristic as an independent variable and group type (project/ comparison) as the predictor.

3.2 Oral Reading Fluency and Comprehension Benchmark

As shown in Figure 3.1 below, 22 percent of Grade 2 children who begun schooling in 2016-17 academic year in the new Program geographies reached our fluent reader benchmark of correctly reading 45 or more words per minute. In contrast to this, only two percent of Grade 2 children in the comparison schools could correctly read 45 or more words per minute; the difference between the groups on this indicators was statistically significant (p

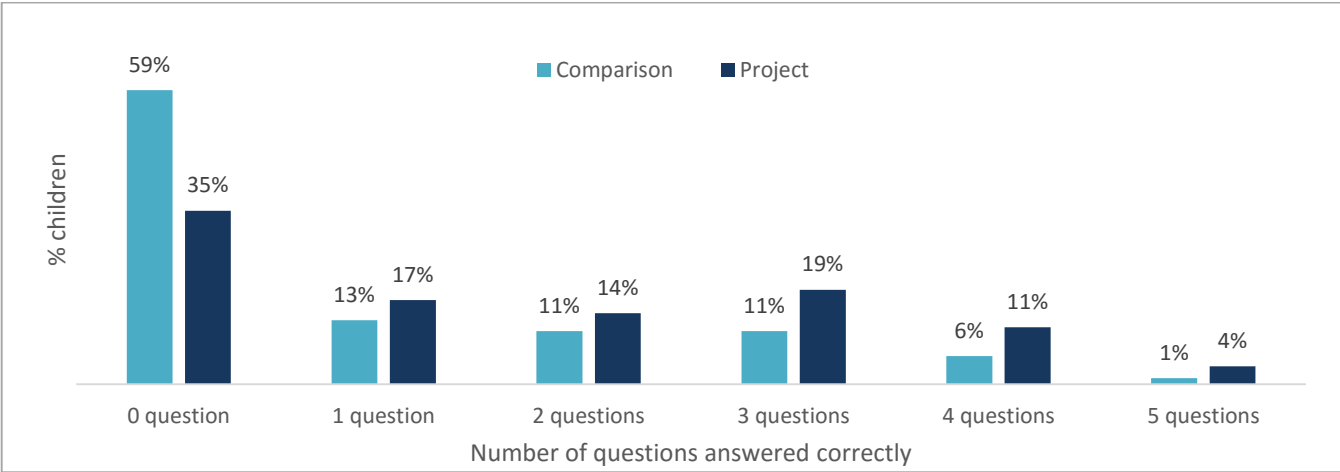
< 0.001). However, it can be also seen from Figure 3.1 that 26 percent of the children in the project schools could be characterized as weak reader who could correctly read only 1-14 words per minute.

FIGURE 3.1: Distribution of Oral Reading Fluency Scores of Grade 2 Children in the New Geographies



As shown in Figure 3.2 below, 34 percent of Grade 2 children in the project schools in the new geographies could correctly answer at least three out of five reading comprehension questions (i.e. reached 60 percent level of comprehension) whereas only 18 percent children in comparison schools could do so; the difference between the groups on this indicator was statistically significant ($p < 0.001$). Also, 15 percent of the project school children could answer at least four out of five reading comprehension questions (i.e. reached 80 percent level of comprehension), which was significantly higher than the share (seven percent) of comparison school children who could do so ($p < 0.001$).

FIGURE 3.2: Distribution of Reading Comprehension of Grade 2 Children in the New Geographies

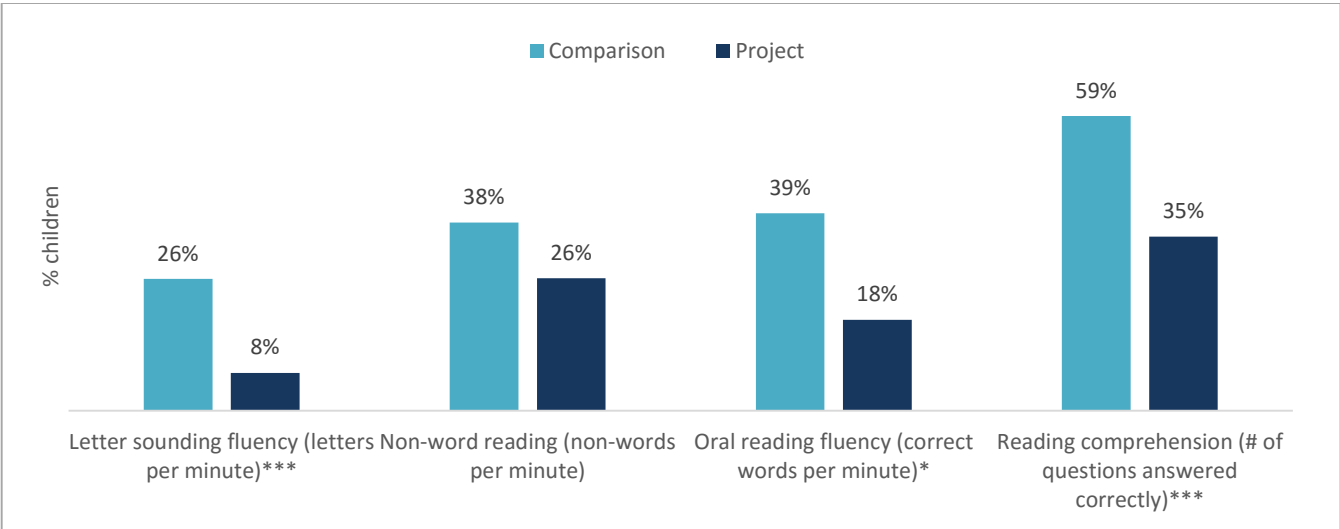


3.3 Prevalence of Zero Scores

As shown in Figure 3.3, prevalence of zero scores for Grade 2 children who begun schooling in 2016-17 academic year in the new Program geographies was significantly lower their counterparts in comparison schools on letter sounding fluency ($p < 0.001$), oral reading fluency ($p < 0.05$) and reading comprehension ($p < 0.001$) tests. However, the analysis also show that 18 percent Grade 2 children in project schools could not read a single word

correctly and 35 percent of the project school children could not correctly answer even one single reading comprehension question.

FIGURE 3.3: Prevalence of Zero Scores for Grade 2 Children across Reading Assessments Tasks in the New Geographies



Legend of statistical significance of difference between groups: * $p < .05$ ** $p < .01$ *** $p < .001$

4 Conclusion

As mentioned above, Room to Read conducted these two evaluations in 2018 to assess (i) whether the positive impact on children’s reading skills revealed by the 2015-17 impact evaluation study in Literacy Program schools under demonstration approach in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) was sustained with the new batch of children enrolled in 2016-17 academic year; and (ii) how well children were performing in Program schools under demonstration approach established in new areas in 2016-17 academic year in Raipur (Chhattisgarh) and Udhm Singh Nagar (Uttarakhand). Results of both of these 2018 evaluations are encouraging. Average reading scores of Grade 2 children who got enrolled in the sample of existing Program schools in Raipur (Chhattisgarh) and Dehradun (Uttarakhand) in 2016-17 were higher than the average reading scores of Grade 2 children who were enrolled in the same schools in 2015-16. On the other hand, in the new Program geographies, Grade 2 children who begun schooling in 2016-17 academic year performed significantly better than their counterparts in comparison schools after two years of intervention. Despite these results, room for improvement exists. For example, prevalence of zero scores for Grade 2 children in Program schools in new geographies were noticeably high. This indicates that more can be done to improve the quality and effectiveness of program delivery.

5 References

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Appendix A: Instruction Component of the Hindi Literacy Program

The instruction component of the Literacy Program is a classroom intervention designed to complement and increase the effectiveness of the government language curriculum. The process of developing the intervention includes the completion of a scope and sequence of instruction, detailed lesson plans, classroom materials, and comprehensive teacher professional development. Literacy Coaches/ Facilitators employed by Room to Read provide classroom support to teachers throughout the intervention.

During the research and development stage of the instruction component of the Program, Room to Read India country team analyzed the language curriculum and classroom instruction to determine whether all five core elements necessary in a comprehensive language curriculum are included. These elements, which are best addressed through a combination of listening, speaking, reading, and writing activities and lessons, include:

- **Phonological awareness:** Phonological awareness is knowing the sound structure of spoken language.
- **Phonics:** Use of the code (sound-symbol relationships) to recognize words.
- **Vocabulary:** The knowledge of the meaning and pronunciation of words.
- **Fluency:** Fluency is determined by how quickly, accurately, and expressively someone reads, which, taken together, facilitate the reader's construction of meaning. It is demonstrated during oral reading through ease of word recognition, appropriate pacing, phrasing, and intonation. It is a factor in oral and silent reading which can limit or support comprehension (Kuhn et al., 2010).
- **Comprehension:** A definition of reading comprehension that captures the purpose of reading is "intentional thinking during which meaning is constructed through interactions between text and reader" (Harris & Hodges, 1995, p. 207). Reading comprehension consists of three elements: the reader, the text, and the activity of reading (Snow, 2002). Writing skills are incorporated into the instructional approach through all components. In addition, teachers teach children how to write and student workbooks provide daily opportunities to practice the writing skills taught.

Appendix B: Location-wise Results of the 2018 Program-only Assessment

TABLE B.1: Reading Assessment Results for Grade 2 Children in the Existing Program Schools by Location

Assessment Task	n	Mean	Std. Deviation
Raipur (Chhattisgarh)			
Letter sounding fluency (letters per minute)	238	60.2	17.8
Non-word reading (non-words per minute)	238	20.5	9.9
Oral reading fluency (correct words per minute)	238	43.4	24.8
Reading comprehension (number of questions answered correctly)	238	2.6	1.4
Dehradun (Uttarakhand)			
Letter sounding fluency (letters per minute)	243	46.5	23.0
Non-word reading (non-words per minute)	243	13.3	10.1
Oral reading fluency (correct words per minute)	243	31.1	25.9
Reading comprehension (number of questions answered correctly)	243	2.4	1.6

FIGURE B.1: Distribution of Oral Reading Fluency Scores of Grade 2 Children in the Existing Program Schools by Location

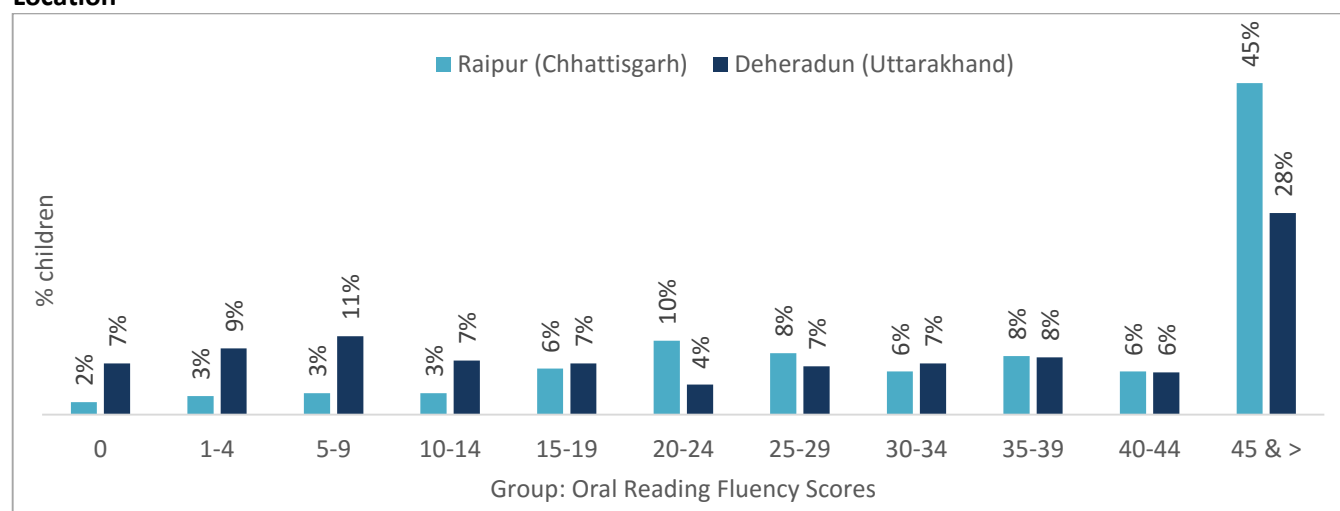


FIGURE B.2: Distribution of Reading Comprehension of Grade 2 Children in the Existing Program Schools by Location

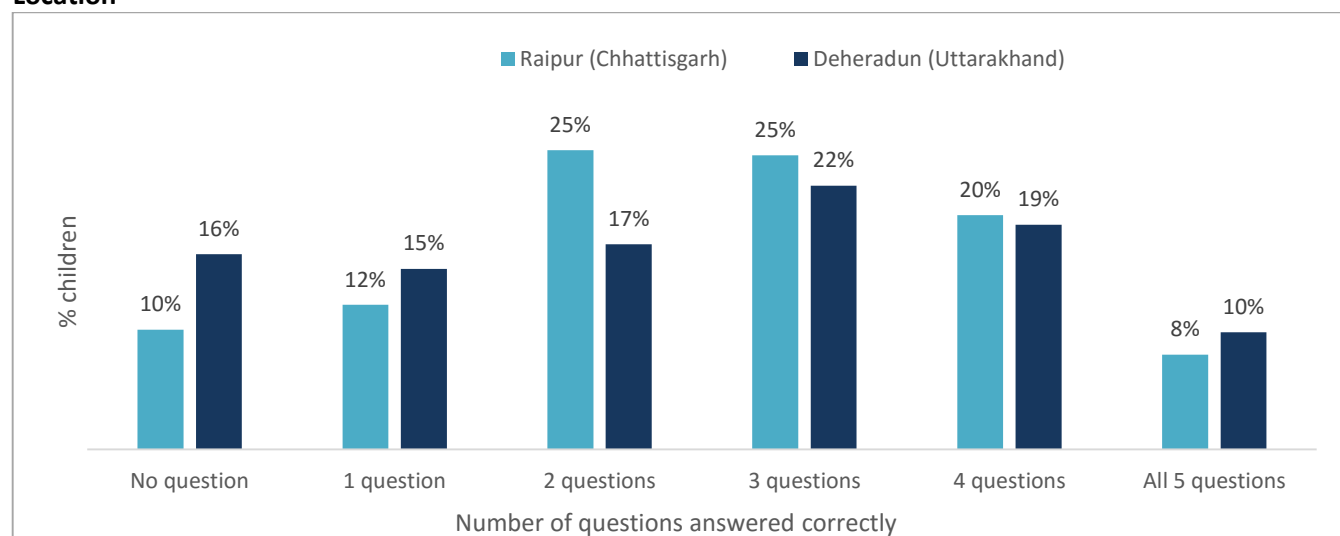
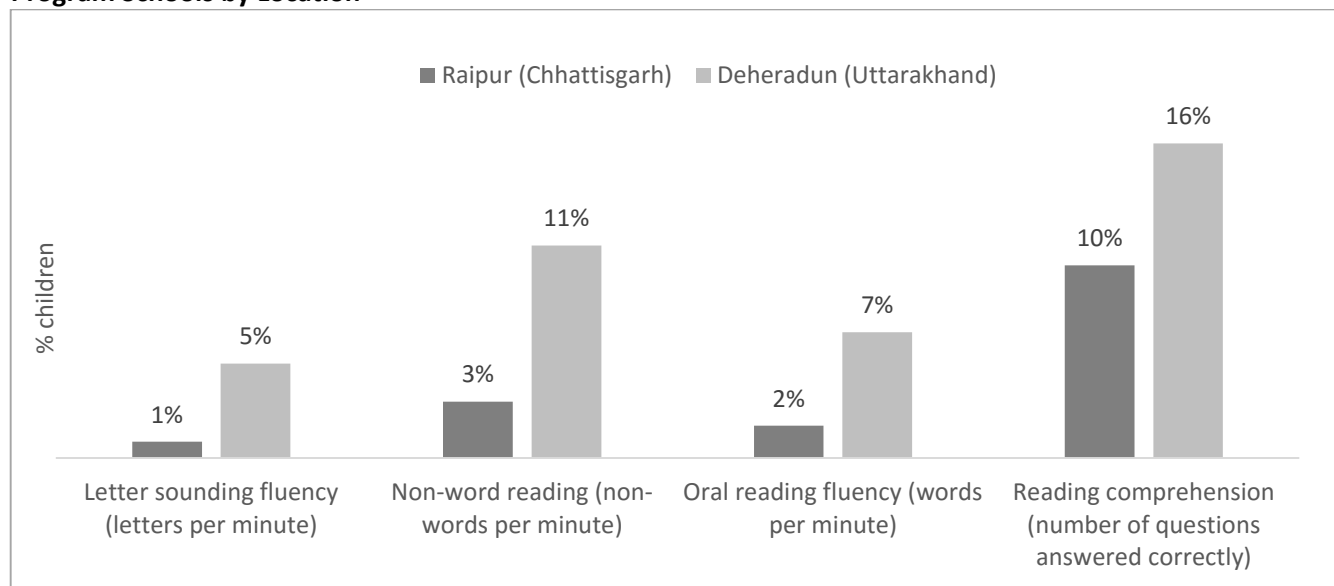


FIGURE B.3: Prevalence of Zero Scores for Grade 2 Children across Reading Assessments Tasks in the Existing Program Schools by Location



Appendix C: Location-wise Results of the 2018 Snapshot Evaluation

TABLE C.1: Reading Assessment Results for Grade 2 Children in the New Geographies by Location

Assessment Task	Group	n	Mean	Std. Deviation	Adjusted difference between Groups [†]
Raipur (Chhattisgarh)					
Letter sounding fluency (letters per minute)	Project	193	55.6	24.2	25.4***
	Comparison	178	30.3	19.6	
Non-word reading (non-words per minute)	Project	193	16.1	11.8	7.1***
	Comparison	178	8.3	7.5	
Oral reading fluency (correct words per minute)	Project	193	34.0	26.4	20.2***
	Comparison	178	12.5	13.2	
Reading comprehension (# of questions answered correctly)	Project	193	1.9	1.5	0.9***
	Comparison	178	1.0	1.3	
Dehradun (Uttarakhand)					
Letter sounding fluency (letters per minute)	Project	192	34.5	24.7	10.6*
	Comparison	141	16.0	26.3	
Non-word reading (non-words per minute)	Project	192	6.5	7.9	1.1
	Comparison	141	3.8	6.0	
Oral reading fluency (correct words per minute)	Project	192	17.4	26.7	7.2
	Comparison	141	5.7	11.8	
Reading comprehension (# of questions answered correctly)	Project	192	1.4	1.6	0.3
	Comparison	141	0.9	1.4	

Legend of statistical significance of difference between groups: * $p < .05$ ** $p < .01$ *** $p < .001$

[†]Adjusted difference between the reading assessment scores of children from project and comparison schools. This reports the coefficient of the independent dummy variable on group type (project/ comparison) separately from each location from the regression analysis conducted with random effects at the school level and age, gender, enrollment in Grade 2, and number of teachers in primary grade as covariates. Regression analysis was conducted for each of the assessment task with score as the dependent variable. Additionally, version of oral reading passage used during test were included in the regression analysis for reporting results for oral reading fluency and reading comprehension, respectively. The set of covariates included in each regression analysis was determined by examining the statistical significance of the difference between project and comparison groups on (i) school-level characteristics through t-tests (for continuous variables) and chi-square tests (for categorical variables); and (ii) child-level characteristics through separate regression analyses with random effect at school level, each characteristic as an independent variable and group type (project/ comparison) as the predictor.

FIGURE C.1a: Distribution of Oral Reading Fluency Scores of Grade 2 Children in the New Geographies – Raipur (Chhattisgarh)

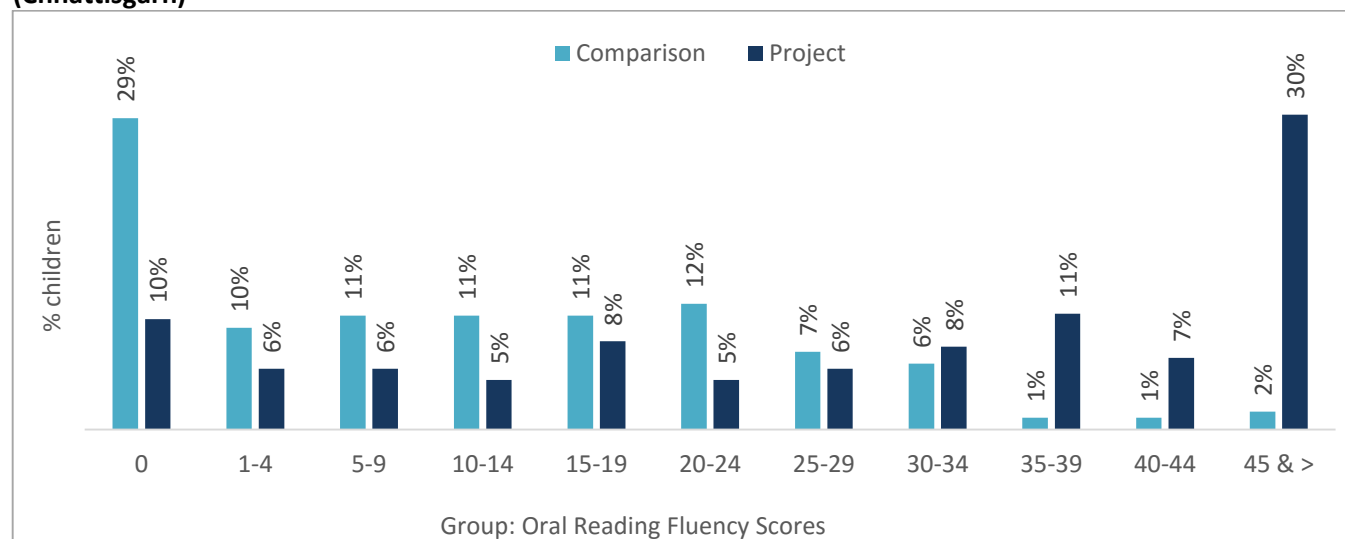


FIGURE C.1b: Distribution of Oral Reading Fluency Scores of Grade 2 Children in the New Geographies – Udham Singh Nagar (Uttarakhand)

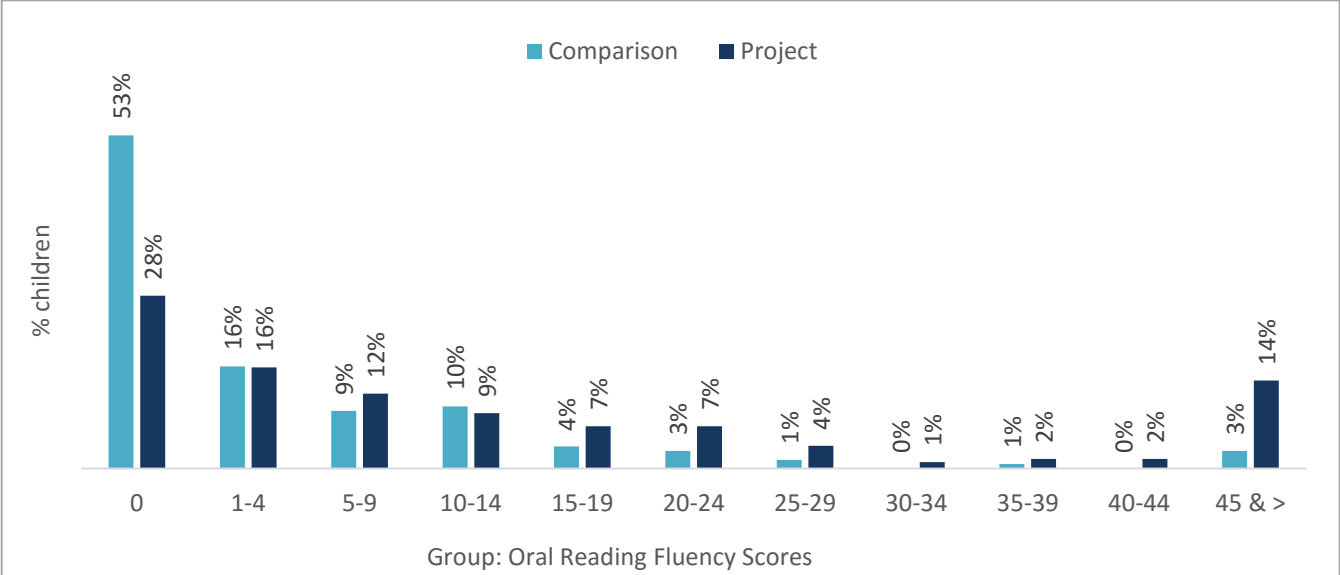


FIGURE C.2a: Distribution of Reading Comprehension of Grade 2 Children in the New Geographies – Raipur (Chhattisgarh)

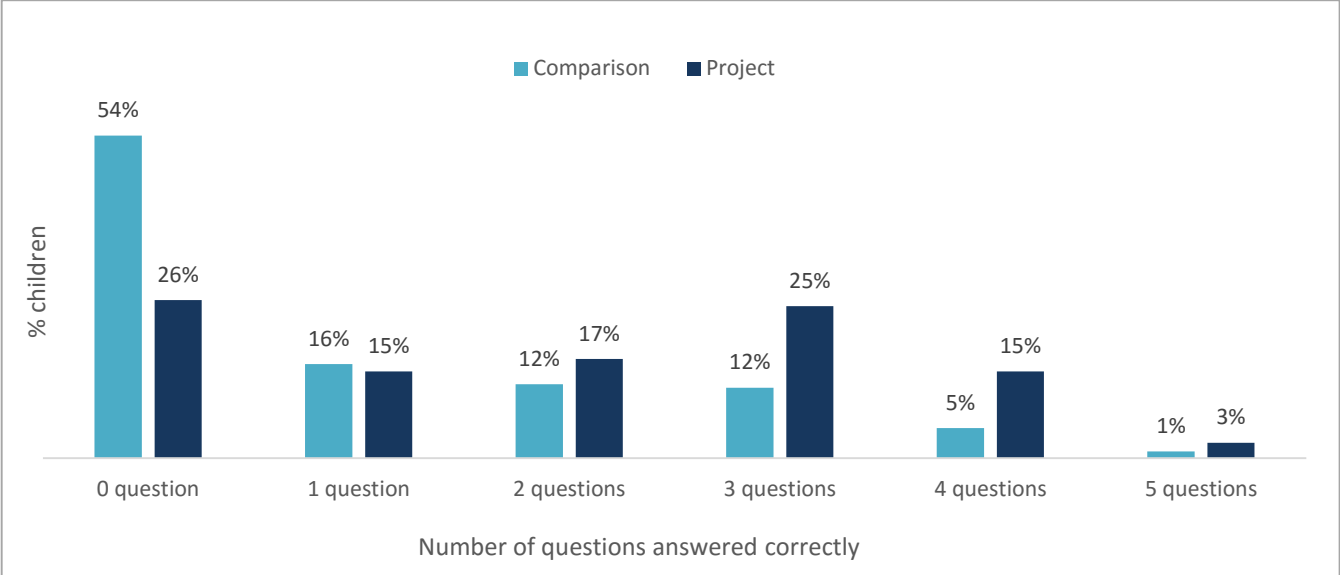


FIGURE C.2b: Distribution of Reading Comprehension of Grade 2 Children in the New Geographies – Udham Singh Nagar (Uttarakhand)

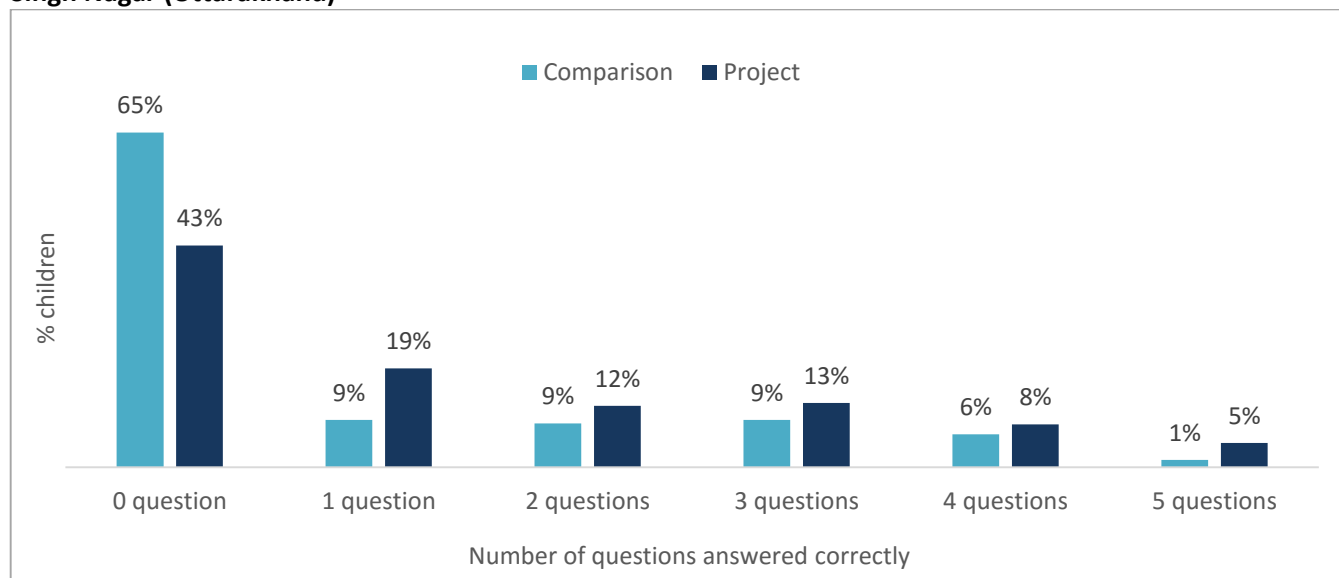
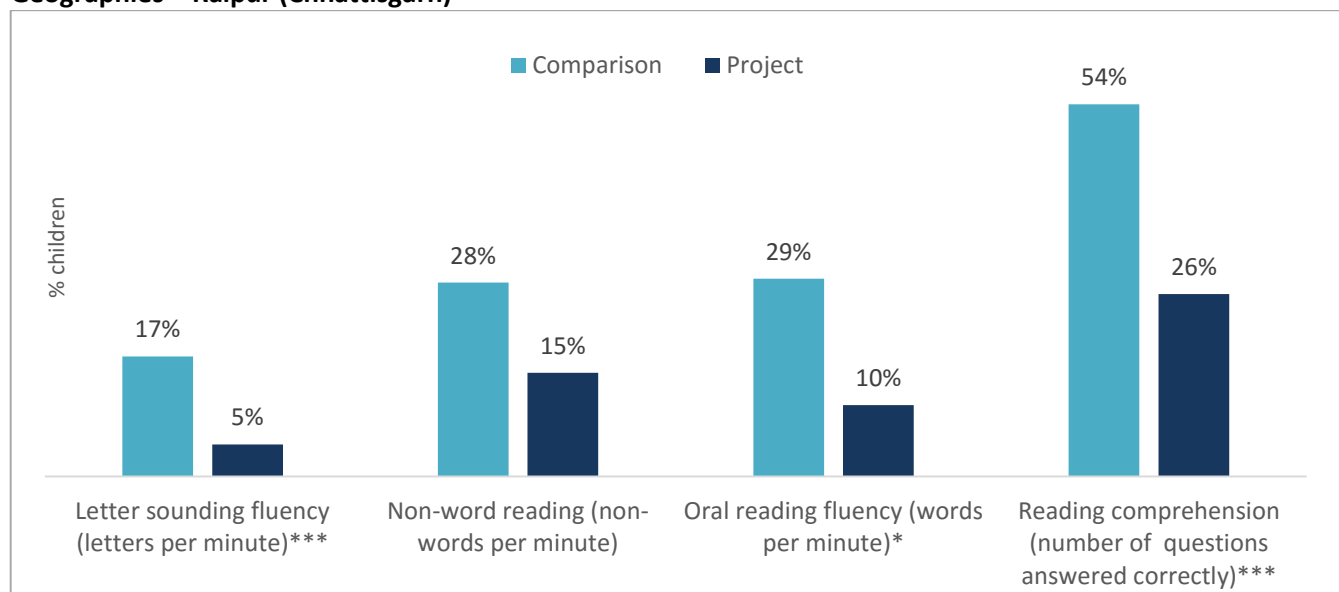
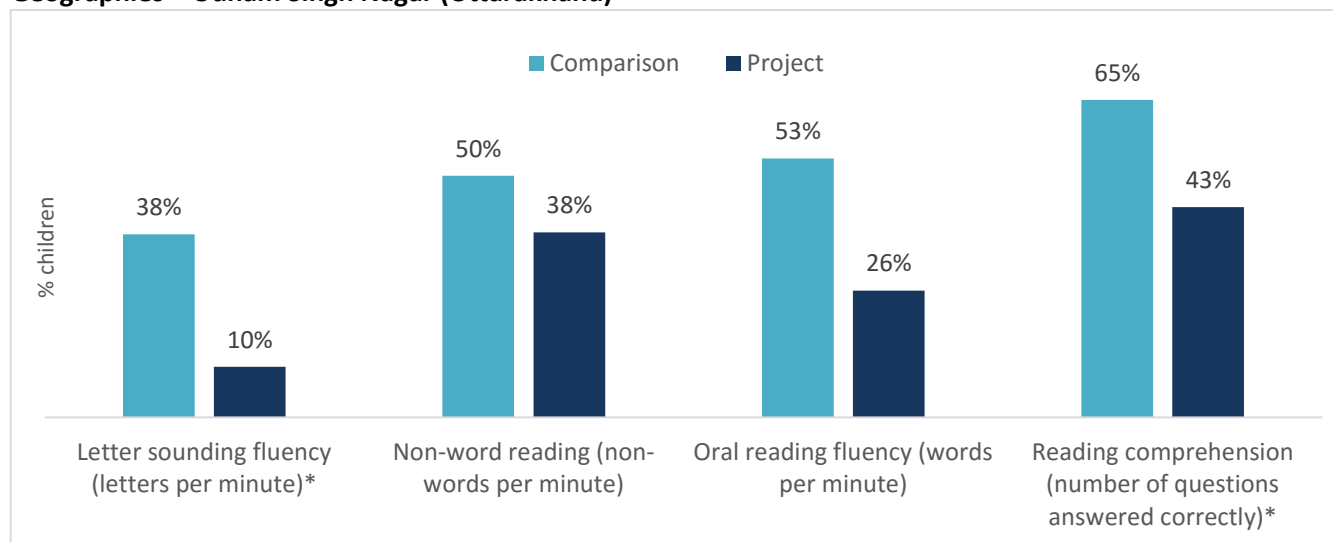


FIGURE C.3a: Prevalence of Zero Scores for Grade 2 Children across Reading Assessments Tasks in the New Geographies – Raipur (Chhattisgarh)



Legend of statistical significance of difference between groups: * $p < .05$ ** $p < .01$ *** $p < .001$

FIGURE C.3a: Prevalence of Zero Scores for Grade 2 Children across Reading Assessments Tasks in the New Geographies – Udham Singh Nagar (Uttarakhand)



Legend of statistical significance of difference between groups: * $p < .05$ ** $p < .01$ *** $p < .001$